

### Trend Study 1-1-01

Study site name: Kelton.

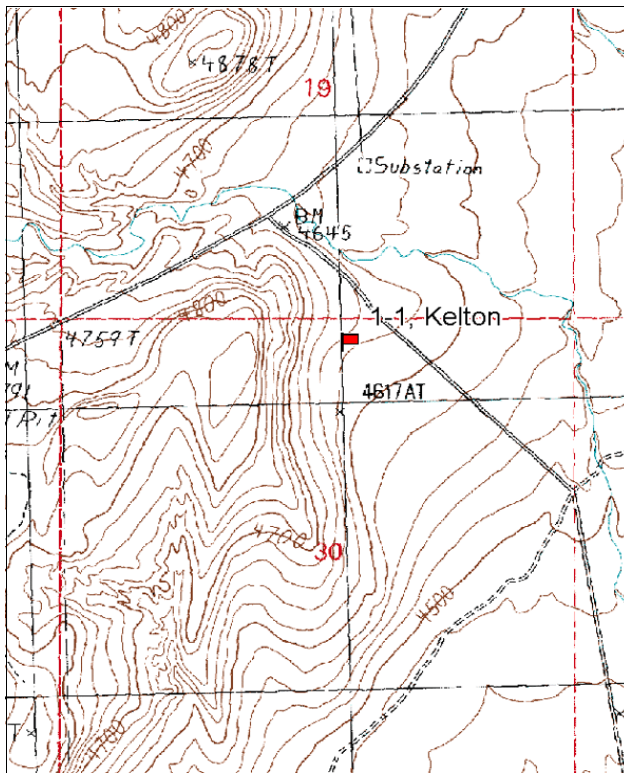
Vegetation type: Big Sagebrush.

Compass bearing: frequency baseline 165 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

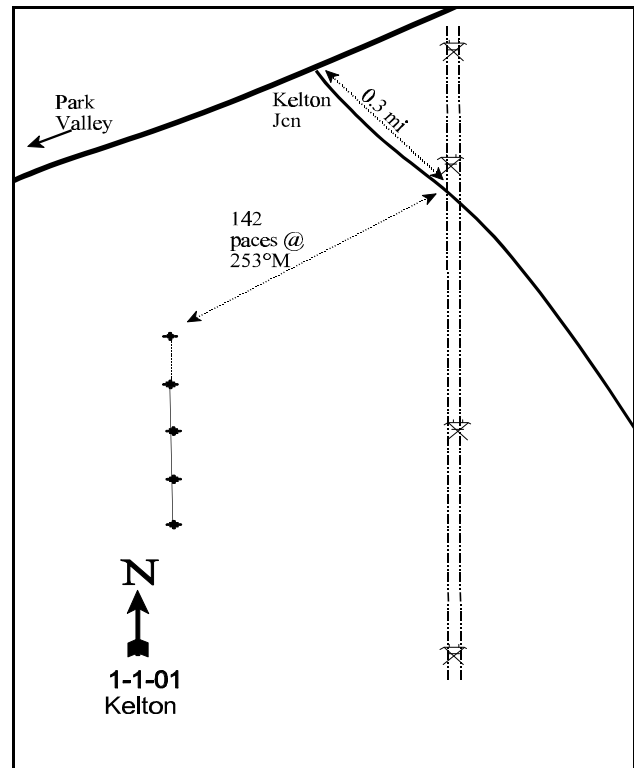
### LOCATION DESCRIPTION

Proceed on U-30 to the Kelton Junction and turn southeast off U-30. Proceed 0.3 miles to a point where the telephone pole line crosses the road. Stop here. From the power pole on the west side of the road, take a compass bearing of 253 degrees magnetic (directly west) and walk 142 paces to the 0-foot stake of the frequency baseline. This is a green steel fence post wired with browse tag #7905. The baseline runs 165 degrees magnetic.



Map Name: Black Butte

Township 13N, Range 11W, Section 30



Diagrammatic Sketch

UTM 4633170 N, 322004 E

## DISCUSSION

### Trend Study No. 1-1

The Kelton trend study is located approximately one-half mile south of the Kelton Junction on Highway U-30. Identified as an important deer and antelope winter range, the study area often has concentrations of both animals. Antelope and deer pellet groups were abundant in the past but since a fire burned the area prior to the 1990 reading, there is little use wildlife. Elevation is approximately 4,640 feet on nearly level to gently sloping terrain with a slight east or east-southeast aspect. Before the fire, the range type was basin big sagebrush with an extensive understory of cheatgrass.

Soil is alluvial in origin and basalt derived. Soil is a loam in texture and is relatively deep. Apart from a few basalt outcrops and boulders, surface rockiness is minimal. Organic matter content is lacking (1.6%) and is primarily derived from a nearly uniform understory cover of dead cheatgrass. Shrubs in the past comprised the primary vegetative cover in combination with cheatgrass. Litter and rock provide a nearly continuous ground cover. Fire before 1990 has reduced shrub cover to less than 3% in 1996 and 2001. Soil erosion is minimal and the soil erosion condition class was determined to be stable in 2001.

Browse composition in the past was dominated by basin big sagebrush with small numbers of white rubber rabbitbrush. During the 1984 reading, total browse density was estimated at 2,565 plants/acre. At that time the sagebrush showed evidence of heavy to moderate use, but exhibited good vigor and a stable age structure. Between 1984 and 1990, a fire burned the area reducing the sagebrush to only 132 plants/acre. By 2001, density of basin big sagebrush has increased to only 220 plants/acre due in part to drought and the competition with cheatgrass.

Currently, understory vegetation is depleted and consists almost entirely of annuals, primarily cheatgrass which accounted for 95% of the total vegetative cover in 2001. Cheatgrass forms a dense uniform cover of "fine fuel" that poses a severe fire hazard when it is dry. Perennial grasses are limited to isolated individuals of bottlebrush squirrel-tail and Sandberg bluegrass. Annual and biennial forbs such as prickly lettuce, annual stickseed, tansy-mustard, and tumble mustard are fairly common. Perennial forbs are limited to a few individuals of gooseberry leaf globemallow and longleaf phlox.

### 1984 APPARENT TREND ASSESSMENT

This site appears essentially stable, although subjected to very heavy deer and antelope use. As a result, overall vegetative condition is below optimum, but not apparently deteriorating further. The browse component is dominant and will remain so. Understory condition is poor but stable. Soil trend appears stable. Litter and vegetative cover are high and the site is nearly level, resulting in almost negligible soil erosion. The greatest threat to the site is the high fire hazard because of the dense annual grass cover. With the right conditions, one fire could eliminate most of the basin big sagebrush that is so important to deer and antelope.

### 1990 TREND ASSESSMENT

A fire on the study site since 1984 has dramatically changed the species composition and eliminated over 95% of the sagebrush population. The area is currently dominated by cheatgrass and Russian thistle, both with 100% quadrat frequency values. Annuals were not inventoried in 1982, so no comparison can be made. Photo point comparisons with 1984 show that much of the understory consisted of cheatgrass before the burn.

#### TREND ASSESSMENT

soil - stable (3)

browse - down after fire (1)

herbaceous understory - down after fire, dominated by annuals (1)

#### 1996 TREND ASSESSMENT

The soil trend has improved slightly since 1990. Percent bare ground has declined while litter cover has increased. Erosion is not a problem on this site due to the lack of slope and abundant herbaceous vegetation cover, but more than 90% is provided by annual species. The browse trend has slightly improved since the fire. Estimated density of basin big sagebrush has increased. The number of seedling and young plants have also increased. On the negative side, broom snakeweed was sampled in the 1996 reading. It currently numbers only 320 plants/acre but has an age class distribution of an expanding population. The herbaceous trend is in stable yet poor condition. Cheatgrass brome still dominates the site, providing 96% of the herbaceous vegetation cover. Perennial grasses are nearly absent. The forb composition is also dominated by annuals. Sum of nested frequency of forbs declined considerably since 1990 due to a major reduction in Russian thistle. Currently, the dominant forbs consist of tumble mustard, prickly lettuce, and scarlet globemallow.

#### TREND ASSESSMENT

soil - improved slightly (4)

browse - slightly up but still depleted (4)

herbaceous understory - stable but dominated by annuals (3)

#### 2001 TREND ASSESSMENT

The soil trend has remained stable. Percent bare ground has remained almost the same, while litter cover has decreased slightly. Erosion is not a problem on this site due to the lack of slope and abundant herbaceous vegetation cover, but more than 95% is provided by annual species. The browse trend is slightly down with a 61% decline in density and an increase in the dead to live ratio (from 1:9.3 to 1:2.2). The number of seedling and young plants have also decreased. The population is still at very low numbers since the fire. Broom snakeweed has decreased substantially since the 1996 reading. It currently numbers only 160 plants/acre with 75% classified as decadent. Cheatgrass brome still dominates the site, providing 95% of the total vegetative cover. Perennial grasses continue to be nearly absent. The forb composition is also dominated by annuals. Sum of nested frequency for forbs declined considerably since 1990 due to a major reduction in Russian thistle. Currently the dominant forbs consist of tumble mustard, prickly lettuce, and scarlet globemallow.

#### TREND ASSESSMENT

soil - stable but poor (3)

browse - slightly down and depleted (2)

herbaceous understory - stable but still dominated by annuals (3)

HERBACEOUS TRENDS --

Herd unit 01 , Study no: 1

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Bromus tectorum (a)	-	<sub>a</sub> 360	<sub>b</sub> 380	<sub>b</sub> 380	-	100	98	97	33.03	58.69
G	Poa secunda	<sub>b</sub> 5	<sub>a</sub> -	<sub>b</sub> 17	<sub>b</sub> 6	2	-	7	3	.10	.04
G	Sitanion hystrix	14	16	3	14	8	7	1	7	.03	.09
G	Unknown grass - perennial	3	-	-	-	1	-	-	-	-	-
Total for Annual Grasses		0	360	380	380	0	100	98	97	33.03	58.69
Total for Perennial Grasses		22	16	20	20	11	7	8	10	0.13	0.13
Total for Grasses		22	376	400	400	11	107	106	107	33.17	58.82
F	Chaenactis douglasii	-	-	3	-	-	-	1	-	.00	-
F	Descurainia pinnata (a)	-	<sub>b</sub> 13	<sub>a</sub> -	<sub>b</sub> 4	-	7	-	4	-	.02
F	Erigeron spp.	-	-	3	-	-	-	1	-	.00	-
F	Euphorbia spp.	-	-	5	-	-	-	2	-	.01	-
F	Euclidium syriacum	-	2	-	-	-	1	-	-	-	-
F	Gilia spp. (a)	-	-	1	1	-	-	1	1	.00	.00
F	Halogeton glomeratus (a)	-	24	-	-	-	9	-	-	-	-
F	Holosteum umbellatum (a)	-	-	3	-	-	-	1	-	.00	-
F	Lappula occidentalis (a)	-	-	-	3	-	-	-	1	-	.00
F	Lactuca serriola	<sub>a</sub> -	<sub>a</sub> 5	<sub>b</sub> 22	<sub>a</sub> -	-	2	9	-	.21	-
F	Phlox longifolia	<sub>a</sub> 5	<sub>a</sub> -	<sub>b</sub> 17	<sub>a</sub> -	3	-	9	-	.07	-
F	Salsola iberica (a)	-	<sub>b</sub> 369	<sub>a</sub> 15	<sub>a</sub> 21	-	100	7	8	.06	.09
F	Sisymbrium altissimum (a)	-	-	<sub>b</sub> 103	<sub>a</sub> 14	-	-	49	5	.81	.02
F	Sphaeralcea grossulariaefolia	2	9	4	3	1	5	2	2	.15	.15
F	Tragopogon dubius	3	-	1	-	1	-	1	-	.00	-
F	Unknown forb-perennial	3	-	-	-	1	-	-	-	-	-
Total for Annual Forbs		0	406	122	43	0	116	58	19	0.88	0.14
Total for Perennial Forbs		13	16	55	3	6	8	25	2	0.46	0.15
Total for Forbs		13	422	177	46	6	124	83	21	1.34	0.30

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

# BROWSE TRENDS --

Herd unit 01 , Study no: 1

T y p e	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Artemisia tridentata tridentata	13	10	1.60	1.30
B	Chrysothamnus nauseosus consimilis	2	2	.38	.38
B	Chrysothamnus nauseosus hololeucus	4	2	.30	.30
B	Chrysothamnus viscidiflorus stenophyllus	0	3	-	.53
B	Gutierrezia sarothrae	10	6	.06	-
Total for Browse		29	23	2.34	2.51

# BASIC COVER --

Herd unit 01 , Study no: 1

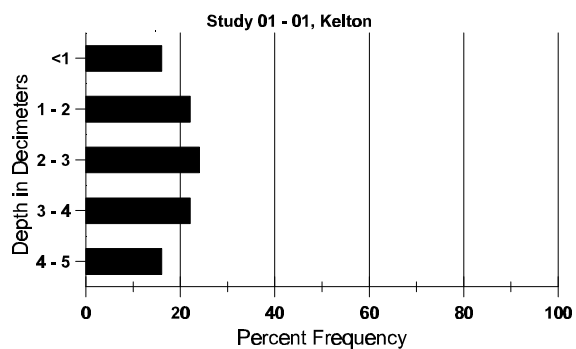
Cover Type	Nested Frequency		Average Cover %			
	'96	'01	'84	'90	'96	'01
Vegetation	388	386	2.00	23.00	39.01	62.26
Rock	111	30	1.25	.75	2.93	.52
Pavement	182	114	.25	1.25	2.15	1.33
Litter	400	381	80.75	54.25	69.33	49.56
Cryptogams	78	35	8.25	0	1.11	1.08
Bare Ground	155	157	7.50	20.75	4.40	7.05

# SOIL ANALYSIS DATA --

Herd Unit 01, Study no: 01, Kelton

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
19.7	61.2 (18.3)	8.2	43.6	34.4	28.0	1.6	15.5	700.8	.61

# Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 01 , Study no: 1

Type	Quadrat Frequency		Pellet Transect	
	'96	'01	Pellet Groups per Acre 01	Days Use per Acre (ha) 01
Deer	-	2	52	4 (10)
Cattle	4	2	70	6 (14)

BROWSE CHARACTERISTICS --

Herd unit 01 , Study no: 1

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (in)		Total			
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.				
Artemisia tridentata tridentata																					
S	84	3	2	-	-	-	-	-	-	-	4	1	-	-	166		5				
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0				
	96	-	-	-	2	-	-	-	-	-	2	-	-	-	40		2				
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1				
Y	84	2	6	2	-	-	-	-	-	-	10	-	-	-	333		10				
	90	2	-	-	-	-	-	-	-	-	1	1	-	-	66		2				
	96	17	-	-	-	-	-	-	-	-	17	-	-	-	340		17				
	01	2	-	-	1	-	-	-	-	-	3	-	-	-	60		3				
M	84	1	15	31	-	-	-	-	-	-	46	-	1	-	1566	27	34	47			
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33	10	8	1			
	96	11	-	-	-	-	-	-	-	-	11	-	-	-	220	21	25	11			
	01	4	1	-	-	-	-	-	-	-	5	-	-	-	100	26	40	5			
D	84	-	7	12	-	-	-	1	-	-	6	-	12	2	666		20				
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1				
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0				
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3				
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0				
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0				
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3				
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	100		5				
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>										
		'84			36%			58%			19%			-95%							
		'90			00%			00%			00%			+76%							
		'96			00%			00%			00%			-61%							
		'01			09%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	2565	Dec:	26%						
												'90	132		25%						
												'96	560		0%						
												'01	220		27%						

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (in) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Atriplex confertifolia																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	34	46	0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'84		00%				00%				00%								
'90		00%				00%				00%								
'96		00%				00%				00%								
'01		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)														'84	0	Dec:	-	
														'90	0		-	
														'96	0		-	
														'01	0		-	
Chrysothamnus nauseosus consimilis																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	11	-	-	-	-	-	-	-	-	11	-	-	-	220	16	16	11
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60	29	41	3
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'84		00%				00%				00%								
'90		00%				00%				00%								
'96		00%				00%				00%				-27%				
'01		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)														'84	0	Dec:	0%	
														'90	0		0%	
														'96	220		0%	
														'01	160		63%	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (in) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus hololeucus																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	1	-	-	-	-	-	-	-	-	1	-	-	33	22	26	1
	96	6	-	-	-	-	-	-	-	-	-	6	-	-	120	20	30	6
	01	1	-	-	-	-	-	-	-	-	-	1	-	-	20	33	58	1
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	-	1	-	-	20			1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		100%			00%			00%			+73%							
'96		00%			00%			00%			-67%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	0%			
												'90	33		0%			
												'96	120		0%			
												'01	40		50%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (in) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus stenophyllus																		
Y	84	3	-	-	-	-	-	-	-	-	2	1	-	-	100		3	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	84	1	-	-	-	-	-	-	-	-	1	-	-	-	33	12	20	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21	38	
	01	4	-	-	-	-	-	-	-	-	2	2	-	-	80	9	25	
D	84	2	-	-	-	-	-	-	-	-	2	-	-	-	66		2	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	199	Dec:	33%			
												'90	0		0%			
												'96	0		0%			
												'01	80		0%			
Grayia spinosa																		
M	84	-	-	2	-	-	-	-	-	-	2	-	-	-	66	33	48	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	25	50	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			100%			00%										
'90		00%			00%			00%										
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	66	Dec:	-			
												'90	0		-			
												'96	0		-			
												'01	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (in) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	14	-	-	1	-	-	-	-	-	15	-	-	-	300		15	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	7	-	-	-	-	-	-	-	-	7	-	-	-	140		7	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	96	9	-	-	-	-	-	-	-	-	9	-	-	-	180	11	16	
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40	6	9	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	6	-	-	-	-	-	-	-	-	1	-	-	5	120		6	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	300		15	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		00%			00%			00%										
'01		00%			00%			63%			-50%							
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	0%			
												'90	0		0%			
												'96	320		0%			
												'01	160		75%			
Leptodactylon pungens																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	7	16	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	18	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-			
												'90	0		-			
												'96	0		-			
												'01	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (in) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Opuntia spp.																		
M	'84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	'90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	'96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	6	0
	'01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'84			00%			00%			00%							
		'90			00%			00%			00%							
		'96			00%			00%			00%							
		'01			00%			00%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'84		0	Dec:	-		
												'90		0		-		
												'96		0		-		
												'01		0		-		